

DAISYWHEEL PRINTER DRIVER
FOR USE WITH
VIEW WORD PROCESSOR



Io Computer Communications

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INTRODUCTION

A versatile printer driver is the key which unlocks the full power of your word processor and printer. The driver gives you full control over the appearance of the printed page, and enables scientific and mathematical expressions and foreign language characters to be included in the text.

By virtue of its extremely compact coding, the Io printer driver supports more than twice as many word processing functions as other drivers. Yet it does this without loss of versatility. The driver can easily be modified or customised to suit your own requirements. There is no limit to the range of printer functions you can now use.

The View word processor supports only two 'highlight' codes, normally used for underscore and bold type. To use the full range of features of the printer driver, the highlight codes are redefined to support the extra functions.

The following pages describe first how to load, use and copy the drivers, and then demonstrate the various facilities provided.

In the examples, the first box illustrates the "source" text as seen within View's edit page. The second box shows the result of printing that text through the Io printer driver.

In all cases, either HT 1 or HT 2 may be set to give the required code. The choice of which highlight to use is purely a matter of convenience.

LOADING AND USING THE PRINTER DRIVER

To use the printer driver, insert the disc into Drive 1 and type

```
PRINTER {filename} <RETURN>
```

where {filename} is the name of the printer driver. For example, if you have purchased a driver for a Juki printer, type

```
PRINTER JUKI <RETURN>.
```

On the command page of VIEW you should now see the statement

```
Printer Juki.
```

This indicates that the Juki driver will be used for all print output.

Throughout the rest of this manual, the use of the <RETURN> key will be assumed.

Naturally, <RETURN> must be pressed at the end of all input lines.

If you wish to use microspacing, type

```
MICROSPACE
```

The View header will now read

```
Printer Juki (m)
```

indicating that microspacing will now be used on all justified lines. Microspacing should normally only be used with 12-pitch daisywheels or with 10/12 pitch wheels.

If you wish to revert to the default driver, type

```
PRINTER
```

and the View header will change to
Printer default.

COPYING FROM CASSETTE TO DISC

If you have purchased the printer drivers on cassette tape, place the tape in the player, type

```
*TAPE
  PRINTER {filename}
then press 'PLAY' on the tape recorder.
```

To make a disc copy of the printer driver, insert a disc in drive 0 and type

```
*DISC
  *SAVE {filename} 400 500
(Please observe the notice on page 1 of this manual regarding the copying of programs).
```

To copy the printer initialisation program INITIAL from cassette to disc, use the following procedure:

```
*TAPE
  *LOAD INITIAL
then press PLAY on the cassette player.
When the load is complete, insert a disc in drive 0, and type
```

```
*DISC
  *SAVE INITIAL C00 D00
```

Similarly, to copy the customisation program, the procedure is

```
*TAPE
  *LOAD CUSTOM
  *DISC
  *SAVE CUSTOM C00 D00
```

On cassettes, a second copy of all files is recorded at 300 baud. In the case of difficulty loading any programs, type

```
*TAPE 3
then continue as above.
```

HT = 128 UNDERSCORE
HT = 129 SHADOW

These are the default values of the two highlights.

HT 1 causes the underscore feature to be toggled on or off.

HT 2 causes shadow type to be toggled on or off. This feature is referred to in the VIEW manual as 'bold'. Although most daisywheel printers support bold type, this is less commonly used than Shadow print. This driver supports shadow print as the default heavy type. True bold can be obtained using HT185. Notice that bold/shadow typing is automatically terminated at the end of a line, whereas underscore stays on until it is explicitly cancelled.

```
.. >.....<  
HT 1 128 Underscore (default)  
HT 2 129 Shadow (default bold)  
This is an example of the underscore  
highlight being turned on or off.  
Bold type can be toggled *on or *off  
but if left on is *automatically  
turned off at the end of the line.
```

This is an example of the underscore
highlight being turned on or off.
Bold type can be toggled on or off
but if left on is automatically
turned off at the end of the line.

HT = 150

EXTRA CHARACTERS AND BLANK

View supports only 94 printable characters, whereas printwheels may have up to 100. The six extra symbols are obtained using highlight code = 150, followed by one of the letters A-F. These letters MUST be written in upper case (capitals). The extra characters obtained depend on the printwheel in use.

The blank character prints as a space, but is not regarded as a space by View. It can therefore be used whenever it is necessary to prevent View from splitting a line on a space. This is useful for example between initials and surnames, and in many mathematical applications. It is obtained in the same way as the other extra characters, but using @ after the highlight.

```
.. >.....<
HT 2 150 extras
cent sign *A, right angle *B,
section marker *C, pound sign *D,
umlaut *E, cedilla *F.
Blank characters in the name
Mr*@J*@P*@Smith.
```

```
cent sign ¢, ESC Yright angle ¯, ESC Z
section marker §, ESC Hpound sign £, ESC I
umlaut ", ESC Jcedilla ¸. ESC K
Blank characters in the name
Mr J P Smith.
```


HT = 151 BACKSPACE/OVERSTRIKE
 HT = 182 NEGATIVE LINE FEED

Using HT=151, the print head will move to the left one character position allowing a second character to be printed over the first one. Note that this may interfere with the right margin justification. If justification is required, it may be necessary to use the 'release margins' facility and control the line length manually.

HT=182 will execute a negative line feed. This can be useful if a large amount of overstriking is required. Note that View will not allow for this when counting lines before a page eject, so the PL setting may need to be adjusted.

```
.. >.....<
HT 1 151 (backspace)
HT 2 182 (negative linefeed)
Some examples of backspace and over-
strike:  O_/   O_-   an_~os   fa_^che_'.

      =====>>>>>=====*
```

Some examples of backspace and over-
 strike: Ø θ años fâché.

```
#####xxxxx#####
```


HT = 160

PAUSE

Use of this highlight will cause the printer to stop in the middle of a print run and wait until a key is pressed. This highlight can be used to change the daisywheel in mid text (even in mid line) or to change the paper, change to a different colour ribbon, insert a gap, alter the character spacing or make any other manual changes. The output will halt until any key is pressed. (If a key is pressed before the highlight code is reached, there will be no pause since the key-press will have been stored in the BBC's buffer.)

Before continuing, the printer's character spacing is reset to the value set on the front panel slide switch. Remember to reset the switch when you change the daisywheel. With dual-pitch wheels, this highlight can be used to alter the pitch without changing the wheel.

```
.. >.....<  
HT 2 160 (pause)  
This is an example of a *change of  
daisywheel* while printing text.
```

This is an example of a change of
daisywheel while printing text.

PRINTER HORIZONTAL TABS

HT = 183	Set horizontal tab
HT = 152	Move to next tab position
HT = 184	Cancel all printer tabs
HT = 153	Form feed

View has its own TAB functions in the form of the 'ruler'. Although satisfactory for many purposes, problems can arise when using Proportional Spacing printwheels. Columns may not then line up correctly.

For accurate alignment with PS printwheels, the TAB positions can be defined on the printer rather than on the word processor. To set TAB positions, write a line of spaces with HT=183 where you want the stops to be. (Effectively, this is writing a 'ruler' on the printer.) Then use HT=152 to tab out to the next position.

Form feed can be used for 'paper eject' without affecting the page count in View.

```
.. >.....<
HT 1 183 (define tab position)
HT 2 152 (move to tab position)

left*first tab*second -
*first*second
**second
HT 2 184 clear tabs
*
```

left	first tab	second
	first	second
		second

HT = 180 HALF LINE FEED
 HT = 181 NEGATIVE HALF LINE FEED

This is the normal way to produce subscripts and superscripts. (The alternative is to use the line spacing functions, HT 204 etc, see page 12.)

The total number of half line feeds should equal the total number of negative half line feeds if the page length and overall line spacing are to be retained. Note that the highlight characters occupy no space, so that the line may appear to overflow the right margin in View but will be correctly positioned on the page.

```

.. >.....<
HT 1 180 (half down)
HT 2 181 (half up)
  subscripts_2* superscripts*3_

H_2*SO_4*   T_b**2_   A_b**c*3__

```

```

subscripts2 superscripts3

H2SO4   Tb2   Abc3

```

HT = 185 BOLD TYPE ON
HT = 186 CANCEL

The default bold highlight gives shadow type, as this is more commonly used for emphasised print than true bold. True bold gives a dark impression when using multi-strike ribbons, but has comparatively little effect with single-strike ribbons or when photocopied or printed. It is turned on with HT=185. It is cancelled automatically at the end of the line; but if it needs to be cancelled before then, this can be done with HT=186.

HT=186 is a general purpose 'cancel' code which will switch off all word processing features of the printer except Proportional Spacing. It can be used to clear HT=185 (bold) before reaching the end of the line.

```
.. >.....<  
HT 2 185  (bold on)  
HT 1 186  (general cancel)  
Bold type is *automatically  
cancelled at the end of a line.  
To cancel *before then_, use HT 186.
```

Bold type is automatically
cancelled at the end of a line.
To cancel before then, use HT 186.

HT = 200 to 255 SET LINE SPACING

Line spacing can be set by printer control codes independently of View's LS setting. The units are 1/48th inch. Any spacing between zero and 55/48 inch can be used. Standard single line spacing is 8 units, giving six lines to the inch.

To set the line spacing, define a highlight to 200 plus the number of units required. After issuing that highlight, the newly-defined line spacing remains in force until altered with another line spacing command. The LS setting within View may need to be adjusted to fit the required number of lines to the page.

HT=200	No spacing
HT=204	1/2 normal line spacing.
HT=208	standard single spacing.
HT=212	Line and a half.
HT=216	Double line spacing.

Using half line spacing is one way of inserting subscripts and superscripts.

```
.. >.....<
HT 1 204 (half line spacing)
HT 2 208 (normal line spacing)
subscripts etc, eg H SO .
                     2 4  *
```

subscripts etc, eg H₂SO₄.

TO USE MORE THAN TWO FUNCTIONS IN ONE LINE OF PRINT.

The **Io** Printer Driver uses View's two highlights to control the many functions on a daisywheel printer. But the highlights can only be redefined by using the Stored Commands in the margin, so there is normally a limit of two functions in any one line. This can be overcome by using HT=150 with the 'unassigned' capitals G,H,I and J. In all, it is possible to create a line containing up to twelve function codes.

HT=150 is used to send a character or an escape sequence which depends on the following character in the line (see page 6). Normally, if the following character is an @, this gives a blank. The upper case letters A to F give the six extra characters.

The letters G to J have the following effects:

- G gives Underscore on
- H gives Shadow on
- I gives Cancel
- J gives Half line feed.

So if HT2 has been set to 150, then *G will turn on underscore facility, and *H will turn on Shadow type.

Furthermore, by using the customisation program (see page 15), the @ may be redefined to give any one-character control code and the letters A to F, as well as the 'unassigned' letters G to J, may all be redefined to produce one-character escape sequences.

The example shows the use of Underscore, Shadow, Cancel, and an Extra character all in one line.

```
.. >.....<  
HT 2 150  
Special price *G*D15.99*I *Hwhile stocks last
```

Special price £15.99 while stocks last

PRINTER INITIALISATION

The program INITIAL can be used to set up your printer. It does not contain any features which cannot be obtained by using the printer driver. But it is sometimes useful to be able to set such things as left margin and line spacing without having to edit source text, especially with long documents.

INITIAL is completely independent of the language or word processor you are currently using. If you use WORDWISE as well as VIEW, it is equally applicable. It can also be used in conjunction with BASIC program listings etc.

To use the program, insert the disc and type
*INITIAL

First the message 'LEFT MARGIN ?' appears on the screen. By pressing the space bar, you can now move the print head to the right. Pressing the DELETE key moves it to the left (provided it is not already at its left limit). When it is correctly positioned, press RETURN and the printer's left margin will be set to that position. If you do not wish to alter the left margin, simply press RETURN without first using the space bar or delete keys.

Then the message 'LINE SPACING ?' appears on the screen. The number you enter is the physical spacing between lines, in units of 1/48th of an inch. Standard single line spacing is 8 units per line, giving six lines per inch. You can specify any number between zero and 255. The number must be typed as an ordinary decimal number. If you wish to leave the line spacing unaltered, simply press RETURN without entering any number.

Finally the message 'COLUMN SPACING ?' appears. Again you can enter any number between 0 and 255, and the spacing between characters will be set to that many units. The units are 1/120th of an inch.

DRIVER CUSTOMISATION

The Io printer driver contains practically every word processing function needed. But some printers support so many escape sequences and control codes that it is not possible for one driver to support them all. The program 'CUSTOM' can be used to modify the action of the various highlight codes, so that unusual control codes or escape sequences can be issued. This also enables the driver to be modified for use with different printers.

Before using the CUSTOM program, it is necessary to load the printer driver in the normal way. Then insert the disc in the drive and type

```
*CUSTOM
```

Cassette users should follow the normal procedure for starting the tape player. To make a disc copy of the program, type

```
*SAVE CUSTOM COO DOO
```

(Please observe the notice on page 1 of this manual regarding copying programs.)

When you have finished customising your driver, you can then save it on disc (or cassette) for future use by typing

```
*SAVE [filename] 400 500
```

The CUSTOM program asks for two numbers, called "location" and "value". For each highlight that you wish to modify, enter first the appropriate location number from the table on page 18, then enter the escape code or control code as given in your printer manual.

The program will continue to repeat asking for numbers until you press ESCAPE or until you answer by pressing <RETURN> without first entering any characters.

The 'location' is always given as a normal decimal number, as in the table. The 'value' may be given either as a decimal number or as an ASCII character. When using the ASCII character representation, it must be enclosed in quotation marks. For example, the code for a half line feed may be described as ESC 85 or as ESC "U". (Entering an incorrect format such as an ASCII character without the enclosing quotation

marks will cause the message "format error" to be printed, and the program will stop.)

For example, you may wish to modify the action of HT=185, so that instead of giving 'bold type on' it gives 'set left margin'. The code for 'set left margin' is ESC 57 or ESC "9". The location for HT=185 is given in the table as 240. So to make this modification, the procedure is

***CUSTOM**

Location ? **240**

Value ? **57**

(bold type indicates what you type in.)

Alternatively

***CUSTOM**

Location ? **240**

Value ? **"9"**

There are several groups of highlights, as shown in the first column of the table on page 18. Changes can only be made within each group. For example it is not possible to change HT 153 (form feed) to produce 'Graphics mode on', because 'form feed' is a control character whereas 'Graphics mode on' is a one-character escape code.

The 'pause' highlight (No 160) cannot be changed.

The two default highlights (HT=128 and HT=129) are both 'toggle' characters, that is, they will switch the appropriate function either on or off. To modify the action of these, both the changes within that group must be made. First, modify the code for 'highlight off'. Then modify the 'toggle' location by typing both the 'ON' value and the 'OFF' value separated by a 'slash' (/). For example, you may want to change the 'default bold' (HT 129) from shadow print to true bold. The code for 'Bold on' is ESC 79, and the code for 'Bold off' is ESC 38. The locations are found from the table on page 18. The process is:

***CUSTOM**

Location ? **230**

Value ? **38**

Location ? **133**

Value ? **38/79**

Highlight codes number 200 to 255 are used to send the printer a 2-byte escape sequence. The first character of the sequence may be altered with the CUSTOM program in the normal way. The second is a number, and is given by the highlight code number minus 199. So the number (which is often called 'n' in printer manuals) may take any value between 1 and 56. For example you may wish to use these highlight codes to set the column spacing index (code ESC 31) instead of the line spacing index. To do this, first modify the driver with

***CUSTOM**

Location ? 69

Value ? 31

Then for widely spaced characters in your text, enter

<pre>.. >.....< HT 2 220 *wide spaced characters</pre>
<pre>w i d e s p a c e d c h a r a c t e r s</pre>

There are four locations which can be altered but which do not correspond to ordinary highlight codes. These can be changed if necessary to modify the driver for different makes of printer:

- (1) "Startup" is the code sent to the printer whenever print output is to be started, and which cancels any special features which may be left over from the previous print.
- (2) "Set CSI" is the code for setting the column spacing index. This is used in microspacing mode.
- (3) "CSI Extra" is the number to be added to the column spacing index in certain printers. It is normally one, but may be zero.
- (4) "Set spacing switch" is the code to set the column spacing to the value set on the printer's spacing switch. This code is sent immediately after the 'pause' highlight (HT=160).

TABLE OF ALTERABLE LOCATIONS.

GRP	HI	DEFAULT ACTION	CODE TYPE	LOC'N
1	128	underscore off	ESC + 1 character ⁸² 38	229
1	128	underscore toggle	ESC + toggle char ⁶⁹	146
2	129	^{shadow} bold off	ESC + 1 character ³⁸	230
2	129	^{shadow} bold toggle	ESC + toggle char ⁸⁷	133
3	180	half line feed	ESC + 1 character ⁸⁵	235
3	181	negative HLF	ESC + 1 character ⁶⁸	236
3	182	negative line feed	ESC + 1 character ¹⁰	237
3	183	set horizontal tab	ESC + 1 character ⁴⁹	238 or "1"
3	184	clear printer tabs	ESC + 1 character ⁵⁰	239
3	185	bold on	ESC + 1 character ⁷⁹	240
3	186	clear WP modes	ESC + 1 character ⁸⁸	241
3	150 A	symbol 1	ESC + 1 character	246
3	150 B	symbol 2	ESC + 1 character	247
3	150 C	symbol 3	ESC + 1 character	248
3	150 D	symbol 4	ESC + 1 character	249
3	150 E	symbol 5	ESC + 1 character	250
3	150 F	symbol 6	ESC + 1 character	251
3	150 G	unassigned	ESC + 1 character	252
3	150 H	unassigned	ESC + 1 character	253
3	150 I	unassigned	ESC + 1 character	254
3	150 J	unassigned	ESC + 1 character	255
4	150 @	blank character	1 ASCII character	245
4	151	backspace	1 ASCII character	242
4	152	horizontal tab 89	1 ASCII character	243
4	153	form feed	1 ASCII character	244
5	200-255	set line spacing	ESC + char + n	69
-	-	Startup	ESC + 1 character	195
-	-	Set CSI	ESC + char + n	209
-	-	CSI Extra	(number)	222
-	-	set spacing switch	ESC + 1 character	101

INDEX

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Customisation	-	15
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Form feed	153	9
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Half line feed (alternative)	150 J	13
Horizontal tab (printer)	152	9
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Negative line feed	182	7
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Underscore (alternative)	150 H	13